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ABSTRACT

This booklet, one in a series about life on modern farms, describes the daily lives of two dairy farm families, the Schwartzbecks and the Bealls of Maryland. Beginning with early morning milking, the booklet traces the farm families through their daily work and community activities, explaining how a modern dairy farm is run. Although this booklet focuses on dairy farming, it includes discussion of major topics that are common to all of the booklets: (1) farming as a business, (2) the impact of technology on farming, (3) the increasing specialization in farming, (4) the role of government in agriculture, (5) the diversity in farming, (6) the interdependence between agriculture and the rest of the economy, and (7) the way of life of farmers and their families. The booklet is illustrated with black and white photographs. (KC)

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PEOPLE ON THE FARM: DAIRYING

U.S. DEPARTMENT OF AGRICULTURE



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PEOPLE ON THE FARM: DAIRYING

Getting calves and heifers in their places is all in a day's work for Nona Schwartzbeck on the farm she and husband Joe own west of Baltimore.

Opposite page:

Nona starts her day getting milk for calves, usually long before dawn. That's the office-milk parlor she's entering.



DAY BEGINS

The countryside was as dark as a cave except for the eerie glow from the lights around the milking parlor on Joe and Nona Schwartzbeck's dairy farm. It was 4 a.m. and time to start milking cows.

It would be 2 hours before dawn and it was already 75 degrees in the milking parlor. As Nona—in her coveralls—and Barney Stambaugh, a part-time helper, silently moved cows into the waiting area, a standup electric fan blew air over the backs of the huddled Holsteins.

Inside, his muscles stiff from last evening's softball game, Joe Schwartzbeck poured his first cup of coffee for the day and moved toward the paved walkway between the two elevated lanes of the milking parlor. Yawning, he turned four dials, and a ration of feed fell

through chutes into feeding pans inside each of four stalls on one side of the parlor. Then he slid open a door for the waiting cows.

Blinded at first by the bright lights, white walls, and stainless steel of the milking parlor, the first cow hesitated, then plunged clumsily forward into the stall where she would breakfast on corn, barley, and protein supplement while being milked.

Three others followed her in and moved to their individual feed bins beside her. As the first batch of four cows, out of the 86 which would be milked that morning, arranged themselves and began eating, Joe and Nona began to wash the cows' udders with a solution of iodine in warm water. They dried them and attached automatic milking cups.

Another 4 a.m. to 7 p.m. day had begun on the Carroll County, Maryland, farm of the Schwartzbecks, just as others

had begun for 365 days a year for the past 7 years. There would be many years of such days ahead as the young couple worked to pay off a quarter of a million dollars of debt and hopefully to leave a dairy farm to their children.

Across America, in that year of 1975, there were another 300,000 dairy farmers starting their day too, though each had chosen a milking time best suited to his or her circumstances. Not far away from the Schwartzbecks, for instance, Rudell Beall started milking at 2:30 a.m. (By 1981, the number of dairy farmers had shrunk to 200,000 in America).

Within hours, some 42 million gallons of milk and milk products would be delivered to children and their parents in cities, large and small, across the country.

"It's going to be a scorcher," Joe said. "Hot weather tears up these cows. But after all, when



It's a hot day, I don't feel much like eating either."

PRODUCTION BEGINS

As soon as the suction cups were attached to the teats of each cow's udder, milk began to spurt into clean glass weigh jars fastened to each stall, and the jars started to fill up with foamy milk.

With these weigh jars, costing \$360 apiece, Joe could tell at a glance how much each cow is giving and whether she might not be feeling well or coming into heat. "Besides," Joe explained, "it gives you a good feeling to see a cow give 63 pounds." Sixty-five pounds, or about 30 quarts, is the top of the scale. Some cows give more.

As the first four cows were being milked, Joe dialed feed

into bins on the other side of his herringbone milk parlor and opened a second door for another four cows to enter.

It took about 11 minutes for an average group of four high-production cows to be milked. Most of the time, eight cows were being milked at once—four on each side of the parlor. As each four completed their morning "assignment," they were released from their stalls and urged firmly but respectfully to move out of the parlor and into a holding barn next door. There more feed awaited them, this time mostly silage and a "top dressing" of grain for the high producers.

"C'mon girls, c'mon Gerty," Joe urged the departing cows. Almost simultaneously, he threw switches to send the warm milk swiftly from the weigh jars through a glass pipeline to a cooling tank in the adjoining room.

Some time before the sun rose, the first 46 cows—the high production group—had passed through the milking parlor.

Joe's system—and others like it—is designed to allow one man to milk his herd without help, though Nona or hired men help regularly. Joe decided to switch from a stanchion system when he decided to enlarge his herd. In a stanchion system, the cows are held in individual stalls and the farmer must bring the milking machine to each cow. That system requires considerable labor and Joe might have been forced to hire more workers to handle the milking with a larger herd.

Under the new setup, which Joe built the previous summer at a cost of \$28,641, one worker can milk 86 cows in 2 hours. When Nona or some part-time help is available, the chore is easier.

A full-time employee, Harold

In well between milking stalls, Nona discusses with Joe how much milk each cow is giving, as measured in weigh jars filling with milk. Inquisitive cat hopes there'll be some milk for her too.

Opposite page:
Floor between stalls of herringbone milking parlor where Nona and Joe are standing is heated in winter. Parlor has four stalls on each side. Multicolored paint spattered on concrete to brighten milking parlor shows up as black spots in photo.





Holman (nicknamed Mr. Gus), arrived at 6 a.m. that day to start feeding the heifers (young cows who have not yet borne a calf and so aren't giving milk).

"Mr. Gus is one in a thousand," Joe said. "He knows how to work. He used to farm with horses. If you hire 'common help' they can bankrupt you in no time.

"You get a guy who beats and bangs on the cows and you're in trouble. You've got to treat a cow right. If you take care of her, she's going to do a little bit extra for you."

As the cows were milked, it was quiet in the milking parlor, with only a radio and the sounds of cows eating rations and giving milk to interrupt the predawn silence. Man and wife spoke very little. The elevated position of the milking stalls gave the milkers a good view of each cow's underpinnings and Joe

noted a cut on one of the cow's legs. He made a mental note to keep that cow separated in the holding barn for treatment later.

THE "SECOND STRING" STARTS THROUGH

The last cows through the milking parlor were the "tail-enders," as Joe called them. In normal milk production, a cow's milk flow is greatest soon after calving, then gradually becomes less or stops just before calving again. The "tail-enders," then, were generally those cows about to calve.

Modern farmers like to breed a cow as soon as possible after calving to increase the amount of milk she gives over her lifetime and the number of calves she can bear. If a cow

hasn't dried up just before calving, farmers often give her a few days' rest. Some feel that a month or so rest period is valuable but others see that as a waste of time.

After the "tail-enders" had left the parlor, Joe washed, sanitized, and rinsed the equipment automatically; washed down the milking parlor, and headed to the house for breakfast. It was 7 a.m. A lot of city folks were just getting up.

The milk from last night's and this morning's milkings would be held in a tank at 38° F. until the milk tank truck arrived at about 8:30.

Over a breakfast of creamed chip beef on waffles—prepared by Nona, who had left the milking parlor long enough to take care of the calves and cook breakfast—Joe talked about the chores that needed to be done that day.

Over a year's time, such jobs would fall into this chain of priorities: take care of the animals through medication, cleaning up after them, feeding them, and so on; then, make sure there will be enough feed in the days ahead (by plowing, planting, harvesting, etc., depending on the time of the year); and finally make sure everything on the farm is in good shape for the work ahead.

In addition to these activities, of course, Joe and Nona knew that at 4 p.m. the cows would have to be milked all over again. It's a twice-a-day, 365-days-a-year operation. Nature made it that way.

In their spacious bright kitchen, Joe, 33, and Nona, 30, recalled with obvious delight over breakfast the only vacation they ever had. They spent 3 days in Minnesota 2 years earlier, when Joe was selected Maryland's Outstanding Young Farmer of the Year.

DAIRY FARMERS ARE TIED DOWN

Dairy farming can be restrictive. And fewer and fewer families want to be tied down.

For that and other reasons, the number of dairy farms in the United States in 1980 was less than half of what it was 30 years earlier. From 1950 to 1978, the number of farms with any milk cows on them at all dropped over 90 percent—from more than 3½ million to less than 336,000. Yet America's needs were met. Fewer farmers were needed to provide milk.

The dairy scene is changing all over the United States. It takes more cows to support a dairy farm family today than it did "in the good old days." Fortunately, one person can take care of many more cows with today's equipment. Mechanization and the employment of full-time help are relieving some of

the confinements of dairy farming. On the Schwartzbeck farm, Mr. Gus has been known to take over the evening milking chore so Joe and Nona can get an early start on an evening out.

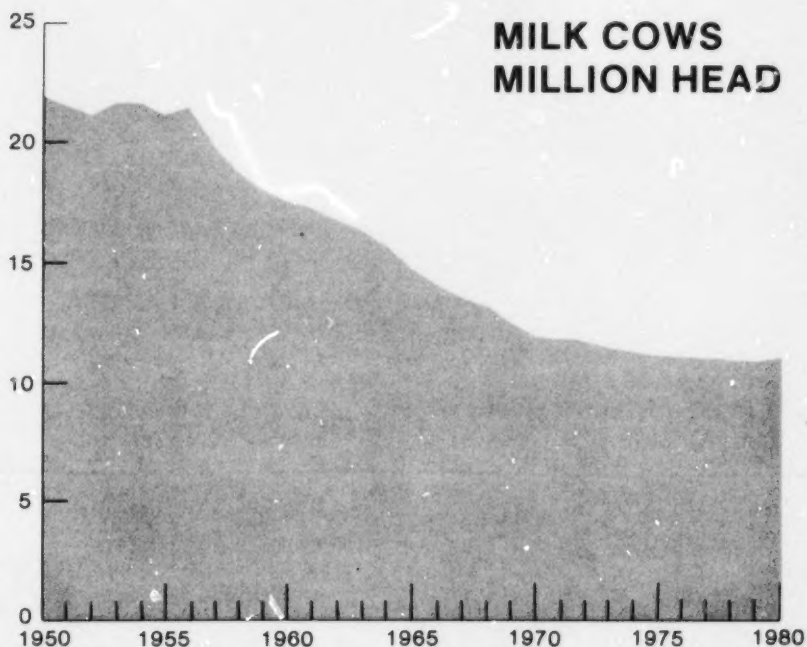
DAIRYING IS A TRADITION ON BEALL FARM

Rudell Beall, who lives about 20 miles from Joe and Nona, has been farming since the thirties. The farm has been in the family since the American Revolution.

Rudell milks 200 cows; that is, he is the president of a family corporation that milks 200 cows. But three families make a living from those 200 cows: Rudell and Joyce, his wife, along with the families of their two boys, Robert and Clark. Of course, it takes everybody in the three families to manage the affairs of the farm, which has 700 acres

Average number of milk cows and milk production, 1950, 1955, 1960, 1965, and 1970-80

Year	Average number of milk cows on farms	Milk production	
		Per cow	Total
	Thou.	Lb.	Mil. lb.
1950	21,944	5,314	116,602
1955	21,044	5,842	122,945
1960	17,515	7,029	123,109
1965	14,953	8,305	124,180
1970	12,000	9,751	117,007
1971	11,839	10,015	118,566
1972	11,700	10,259	120,025
1973	11,413	10,119	115,491
1974	11,230	10,293	115,586
1975	11,139	10,360	115,398
1976	11,032	10,894	120,180
1977	10,945	11,206	122,654
1978	10,803	11,243	121,461
1979	10,743	11,488	123,411
1980	10,815	11,875	128,425

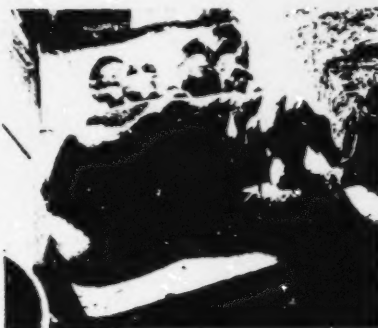




After milking, it's time for breakfast with rest of family, Gus, 10, and Shane, 6. Breakfast was prepared by Nona after other chores. Gus and Shane, ultimate beneficiaries of all the work, help in many chores on farm. At same time, Barney Stambaugh, part-time helper, cleans out holding barn.

Community interests as well as farm needs send Nona into nearby towns frequently. Her home, believed to be 19th century farmhouse, lacked modern wiring, even hot water when she and Joe bought it in 1968. They've restored its old-time dignity. Judy Boom, purebred Basset hound, proves there's always room for more on the farm, especially purebreds.

Opposite page:
Hauling hay to the cows is just one of endless activities keeping hired man Harold (Mr. Gus) Holman busy all day.



(half of it rented).

"Sixty to 80 cows just won't provide for three families," Rudell comments. "When I was 12—back in the thirties—I helped dad build a barn for 20 cows that we milked by hand. Dad supported our family on those 20 cows. By 1940, we thought we needed 32 cows. But we couldn't handle that number with hand milking, so we bought electric milkers."

As Rudell took over more and more of the operation of the farm, he increased the number of cows and the amount of land he needed to grow feed for the cows. His sons became able to help, so by 1965 he had 100 cows, but he had to put in a milking parlor to handle them.

"Now we have 10 times as many cows as we had in the thirties and basically three men handle them—just as dad and I and a hired man did with 20

cows."

The Beall story is not unusual. For years it has been "sink or swim" in the dairy business. Those who survived learned to swim; that is, they learned how to manage larger and larger herds to make a living.

While the number of dairy farms in the United States is decreasing, the size of the herds is increasing. The average number of cows on a dairy farm has increased more than 700 percent in the last 30 years. In 1980, the average commercial dairy herd had an estimated 40 cows. Only 5.4 percent of U.S. dairy farmers had 100 or more cows, but they produced a third of our milk that year.

Better feeding, better breeding, and better management have increased the output of the average cow too. Since World War II, milk yields per cow have more than

doubled, reaching more than 11,800 pounds (about 5,500 quarts) in recent years.

The Schwartzbeck and Beall herds are larger than most, but they aren't the largest by far. In California, there are several

Of the 335,270 U.S. farm operators reporting cows in 1980, more than 60 percent reported less than 30 cows, and most had only one to four cows. About 5 percent reported 200 or more.

In 1980, farms selling the greatest dollar amount of dairy products were those with 50 to 99 milk cows. These farms averaged \$116,000 in total cash receipts from milk.

About half the total number of dairy cows were on farms having from 30 to 99 cows.



herds of more than 2,000 cows each, and folks are milking 22 hours a day (and cleaning up for two more). In Florida, some herds exceed 8,000 head. In the 1978 farm census, 844 herds had 500 or more milk cows.

Obviously, life on farms with this number of milk cows is different from life on the Schwartzbeck and Beall farms.

AFTER BREAKFAST JOE AND NONA TURN TO OTHER WORK

After breakfast, Joe and Nona went back to their various chores. But this time, Nona left the farmstead. As catalog and food booth chairman of the Carroll County Fair, which was to open the next week, she had to distribute the fair books around the countryside.

Nona, who hates housework when it's "fit" to be outside, left an automatic dishwasher at work in the kitchen beside the color-coordinated stove and refrigerator.

Joe headed for his holding barn where two cows with cut legs awaited his attention. Joe does as much of his own veterinary work as he can—balancing the cost of a veterinarian against not only his skills but his time. He might have other work to do—the hay might be at a critical stage and need his attention more than the cow.

In the barn, a hired man fashioned a rope sling for a cow's rear right leg, threw the end of the rope over a stanchion pipe, and pulled the cow's leg up for Joe to administer medicine. Joe squirted some black liquid out of a can onto the inflamed ankle, then applied ointment medication from a jar. He called the cow's

name softly to calm her fears—she'd been fidgeting in the stanchion—as he rubbed on the ointment.

"I wonder what this stuff is," he pondered aloud, "power juice? I know it works because I used it on myself."

Seeing those two men caring for an individual cow, gently calling her name as an anesthesia, it was difficult to see Joe's farm as a milk factory. It was simply two people trying to make a living doing what they knew best, taking care of the animals they love.

Hope for profit helps them keep cleaning up the tons of manure that accumulate on a dairy farm. Machines help with the cleaning of a stanchion barn or a waiting area, with the loading of a wagon, and with spreading manure around on a field. But it is a never-ending job.

HOW DO YOU DEFINE A DAIRY FARMER?

If you ask a dairy expert how many dairy farmers there are in the United States, he might say, "I don't know." He could tell you how many dairy cows there are and how many farms have cows on them.

But a "dairy farmer?" Experts themselves can't agree on what a dairy farm is.

Should a dairy farm be any farm that has a dairy cow on it? Probably not. Yet, we can find out how many of those there are.

Should it be any farm that sells dairy products? Perhaps. But some farms that rely on other products, such as livestock or grain, for most of their income sell dairy products on the side.

You can find out how many farms sell dairy products.

The Census Bureau says: "To be classified as a particular type, a farm must have sales of a particular product or group of products

amounting in value to 50 percent or more of the total value of all farm products sold during the year."

So, the Bureau lists cash-grain farms, tobacco farms, cotton farms, vegetable farms, and so on.

But when it comes to dairy farms, the Bureau modifies its definition. It says: "A farm having value of sales of dairy products amounting to less than 50 percent of the total value of farm products sold is classified as a dairy farm, if:

- Dairy products sold account for more than 30 percent of the total value of products sold.
- Milk cows represent 50 percent or more of total cows.
- The value of dairy products sold plus the value of cattle and calves sold amount to 50 percent or more of the total value of all farm products sold."

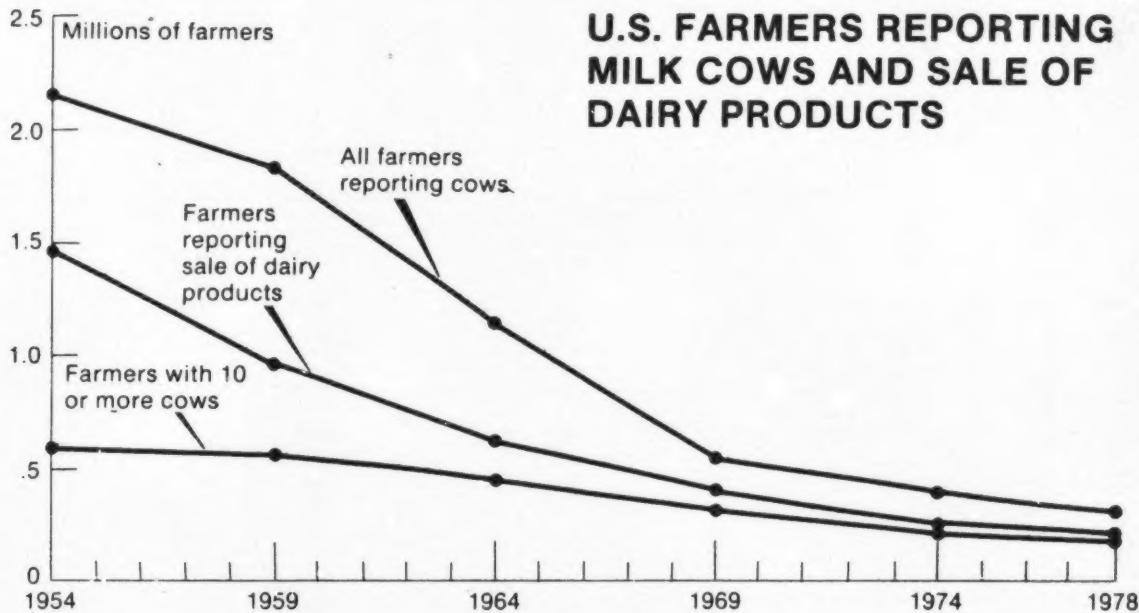
But some experts find fault with those figures.

In a study called "The U.S. Dairy Industry Today and Tomorrow," (Michigan State University research report 275), C. R. Hoglund says the more realistic figure in showing trends in the number of dairy farms is the one for herds of 10 or more cows.

He illustrates this in the chart below.

In *People on the Farm*, the number of dairy farms is based on the Census Bureau definition.

No matter how you define dairy farms—and who guarantees that the number of dairy farms equals the number of dairy farmers—the trends are unmistakable. There are fewer and fewer of them.





Chopping hundreds of acres of corn into tons of silage to be stored in huge open trench silo is big fall activity on a dairy farm. Mr. Gus is overseeing. Silage will provide year's supply of forage for cows. Mr. Gus and Joe pause in their vehicles to watch wagon loading and unloading operations.

In the winter, the job of cleaning up is multiplied because the cows aren't put out to pasture as they are in the summer. They are held in one small area most of the time.

"Like the kids," says Nona, somewhat regretfully, "they're inside most of the time in the winter."

In the winter on a dairy farm, as Joe describes it, "there isn't much to do except clean up, feed up, and bed down (lay out clean straw for the animals to rest on)." But, of course, that doesn't include machinery repair and other "fence-mending" jobs around the farm, not to mention twice-a-day milking, and so on.

SPRING IS A BUSY TIME

A winter's day on a dairy farm would probably be a full day's work for a lot of folks. But in the spring things really get busy on

a dairy farm, and they stay busy through fall.

In the spring, there's corn planting. The start depends on the condition of the ground as well as the best time for corn to germinate in that particular area. Commercial fertilizer (the amount depending on soil tests) and a herbicide might be applied at the same time.

Haymaking starts late in the spring on the Schwartzbeck farm too.

In May, Joe starts looking over his hay fields of alfalfa, timothy, and clover. If the hay is mature enough to cut, he analyzes the sky. Will the weather stay dry for 2 more days so he can get the hay into the barn? If the hay gets wet after it's been cut, it will lose a lot of its nutrients. Cows need good hay. If Joe decides this is the day to cut the hay, everything on the farm is dropped except the milking and the required cleaning up. Joe, Mr.

Gus, and all the help they can muster will start cutting hay in the morning after milking and continue until it's done.

The next morning, if Joe finds the cut hay dry, it will be raked into rows. If it were baled when too wet, it could heat up and spoil. If there still has been no rain by the day after cutting, the men will bale the hay in the afternoon and haul it into the barn as rapidly as possible.

This drama will be reenacted 12 or 15 times before summer is over. Hay is necessary. Haying is tricky.

Corn also has problems with the weather. The fields may be too wet to plant early enough in the spring so that the crop matures fully before frost in the fall. Or a summer drought might stunt its growth. Too much rain could encourage disease or delay harvesting. Then there's the bugs and "down" markets and...well, that's farming.

Joe planted 260 acres of corn in 1975. He cut 100 acres of it for ensilage (a succulent meal of corn—stalk and ears and all—cut green and stored to feed the cows from September to September). The rest of the acreage he let mature to harvest for gain.

Joe needed 7,800 bushels of corn a year to feed his herd in 1975. If everything went right (usually this means the weather), Joe hoped to "make" 100 bushels to the acre; that is, his fields would produce that much. If he got the 7,800 bushels from 78 acres, that would leave him 8,200 bushels to sell on the open market—usually to others in the United States and overseas who need corn for feed.

WHEN IS THE BEST TIME TO SELL?

Every day Joe wonders when he should sell that "extra" corn. He can even sell it before he plants it (by contracting ahead with a local elevator owner or feed mill). Or he can sell it anytime during the crop year, as he watches it grow, watches what the weather is doing to corn crops in other parts of the world, and watches what the prices are doing in Chicago (which pretty much sets the market locally).

If he makes 100 bushels to the acre and if he can sell the production off 82 acres on the market at \$3.17 a bushel, then Joe can pay off the \$26,000 note he signed earlier in the year to buy seed and fertilizer. And if all those good things don't happen—if for instance, his yield should run 70 bushels to the acre—then Joe will have to dig up the difference from his only other sources of income: the monthly milk check and the sale of animals.

In 1974, the sale of milk brought the Schwartzbecks a gross income of \$110,000. In

addition, they sold one cow for \$11,000 (a rare animal—the usual milker brought only about \$450 that year) and a few male calves at negligible prices, bringing their total income for the year to about \$121,000.

Some years there won't be any "extra" corn for Joe to sell. The weather (or perhaps a devastating corn virus) will have such a bad effect on his crop that he'll need all the production of his corn acres for ensilage and feed grain. But there'll always be the

fertilizer bill to pay.

And some years he may even have to buy corn. In 1974, it so happened he swapped the "extra" corn for the soybean meal he needed.

Joe also sowed 70 acres of barley, which provided him with another type of grain he needed for his herd. In Maryland, barley is sown in the fall (between twice-daily milkings—when the ground is right), and harvested in the summer (between hayings).

JOE AND NONA'S INCOME AND EXPENSES, 1975

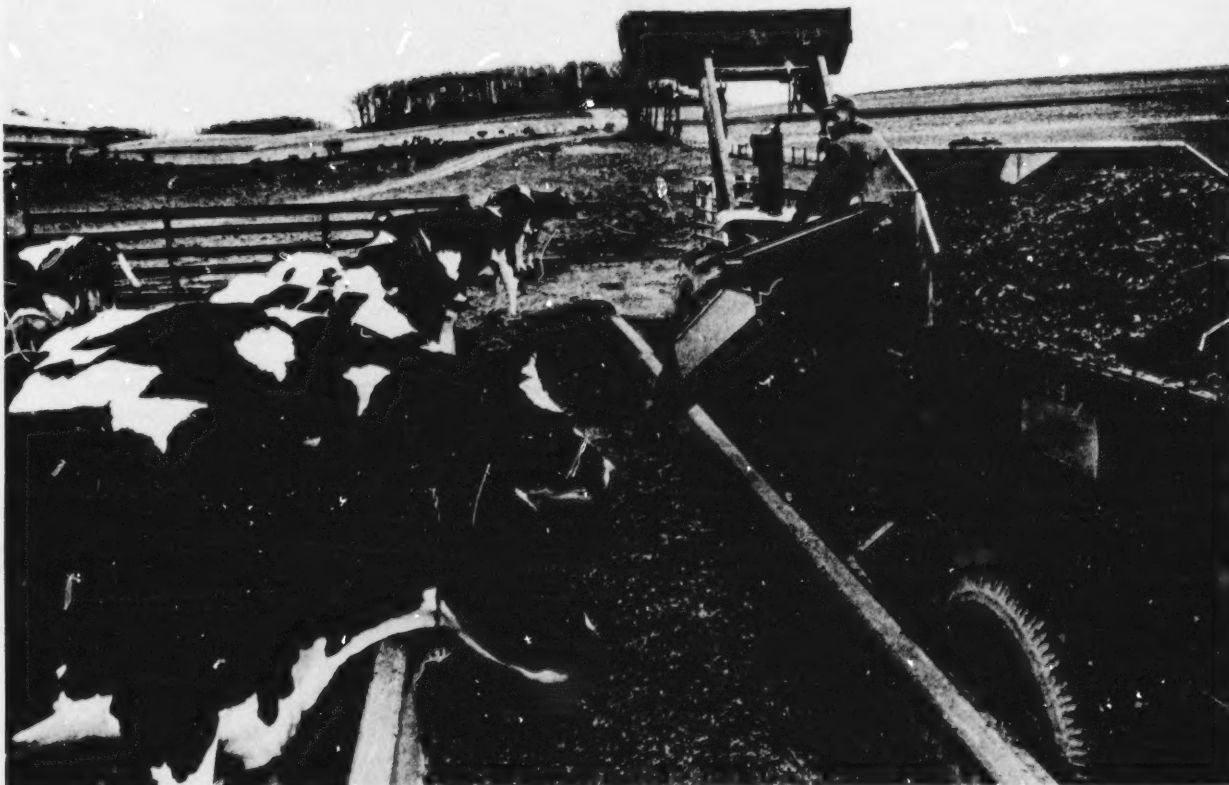
Income		Expenses	
Dairy Products	\$132,471.40	*Labor	\$15,255.00
Grain	10,073.20	Repairs—	
Premiums	825.50	Buildings	1,803.79
Hay & Straw	167.58	Repairs—	
Machine Hire	1,077.26	Machinery	6,025.58
Other Income	961.65	Interest	20,250.39
Cattle Raised	1,550.00	Rent Pasture	3,235.25
Dairy Cattle	7,254.82	Feed Purchased	25,682.08
Steers	1,095.63	Seeds	846.50
		Fertilizer & Lime	37,237.72
		Machine Hire	940.00
		Supplies	
		Purchased	5,329.88
		Breeding Fees	2,174.61
		Veterinary	3,247.08
		Gasoline & Oil	3,312.19
		Taxes	1,329.12
		Insurance	4,481.59
		Utilities	3,681.93
		Advertising	343.01
		Truck & Auto	155.00
		Professional Fees	580.00
		Herd Testing	764.68
		Holstein Assoc.	523.20
		Propane Gas	528.30
		Depreciation	36,000.00
		Misc. Expenses	1,532.34
		Office Supplies	245.99
		TOTAL:	\$172,505.23
TOTAL:	\$155,577.04		
TOTAL EXPENSES			
	\$172,505.23		
TOTAL INCOME			
	\$155,577.04		
LOSS	\$ 16,928.19**		

* Does not include Joe and Nona's labor and management.

** This is not a cash loss because of allowance for depreciation and other considerations.



Joe makes sure 38 percent protein feed being unloaded from truck of Floyd Devilbiss, facing camera, hits auger that will carry it to nearby storage bins. Joe arranged for delivery from cooperative in nearby Union Bridge, Md. Later, Joe's face, caked with dust, shows effects of working with feed.



Joe and Nona's cows, all purebred registered Holstein-Friesians, are being fed silage from a feed wagon by Mr. Gus. They wear chains with identifying numbers around their necks. Earlier, as calves, they sport ear tags for identification. It's Nona's job to draw identifying black and white markings for each calf on forms submitted to National Holstein-Friesian Association for permanent registration. Good breeding pays off. Nona points to national, State, and local awards won by one of their cows, a superior producer who later sold for \$11,000.

THE COWS ARE THE CENTER OF ATTENTION

There are things to work at—and worry about—on Joe and Nona's dairy farm, aside from growing, harvesting, storing, mixing feed, and feeding the cows. They have to keep production records... take the cows to breed shows... buy them... sell them... see to their breeding through artificial insemination.

Like most other dairymen, Joe believes strongly in improving dairy stock through scientific breeding—the careful matching of hereditary traits to obtain the best animals. This not only helps Joe as a farmer—by getting more milk per pound of feed—but it also helps the dairy industry as a whole because the feed supply goes farther.

Thanks to better breeding, feeding, and recordkeeping, the average milk cow today produces more than twice as much milk as her counterpart did after World War II.

A cow on Joe's farm gives 16,100 pounds of milk a year, on average. That's 35 percent above the national average of 11,875 pounds for 1980.

Joe knows what his herd produces because a supervisor from his local Dairy Herd Improvement Association (DHIA) drops by every month unannounced to measure each cow's production for that day.

There are more than 1,000 DHIA's, involving some 63,000 dairy herds. Annual production per cow in DHIA herds averages about 14,500 pounds, or about a fifth more than the average for all cows in the Nation.

Joe's DHIA, run by farmers in his area, helps him keep track of each cow's production, but it also helps him monitor feed requirements. Joe knows how much income each cow contributes to the farm and whether

she's worth keeping based on such factors as feed costs. He knows which cows to use for "breeding up" the quality of his herd.

A good producer with a good "family name"—one with a good pedigree—commands respect on a farm (an extra pat, some nice words... whatever keeps her happy).

Joe had one old cow that gave 28,000 pounds one year. Compare that with the national average! "They told me she wouldn't be able to produce any more calves," Joe said. Now when a cow can't have calves, that means the milk flow stops and, of course, she'll have no more offspring to carry on her bloodline.

Joe put the old producer in with the herd producing less milk, where he lets a purebred bull run free as a "husband."

"That younger bull in the lesser producing herd has produced near miracles," Joe said. "We've achieved some pregnancies that didn't seem possible with artificial insemination."

That cow became pregnant.

ARTIFICIAL INSEMINATION PLAYS A BIG ROLE

Most breeding on the farm is done by artificial insemination, as is true nationally. And most of the genetic progress in dairy breeds has been made through the use of genetically superior bulls.

Joe keeps semen from several bulls in a small capsule-shaped metal container in a room near the milking parlor. The bulls represented have a variety of inherited characteristics plus good records.

Near a display case with blue ribbons ("All Maryland Aged Cow," and "Member, All American Get of Sire"), Joe withdrew from a container an ampule of

frozen semen, kept at 320 degrees below zero by liquid nitrogen.

"An ampule from a good sire that has since died might be worth \$400," Joe explained. "I once traded two ampules for two heifers (Joe's been paying \$500 to \$600 apiece for heifers)."

Though the genetic worth of some famous old bulls was great in their day, progress in the upgrading of dairy cows has been so rapid that the genetic worth of those old bulls would be just average for their breed by today's standards.

In the barn, Joe inserted a plastic tube into the cow's uterus and squeezed the ampule to inseminate the cow. The cow was not disturbed. Once, Joe split one costly ampule and gave it to two cows. He called it a gamble, but it could pay off big. In 1974, he sold a cow with a good production record and good family lines for \$11,000. But, after all, a good tractor costs more than that.

Dairying, as in all farming, takes money to get the job done. In 1975, Joe paid out more than \$170,000, including depreciation. That doesn't allow for the value of family labor.

Production costs on the Beall farm are correspondingly higher and reflect inflationary increases over the years. Rudell pointed to his tractor barn and said: "That tractor cost me \$6,000. That one, \$8,000. That one, \$10,000. The one my son is driving right there cost \$16,000. We need all of them..."

Firm or product names used in this publication are solely for the purpose of providing specific information. Mention of these names does not constitute warranty of a product by the U.S. Department of Agriculture or an endorsement of it by the Department to the exclusion of other products.

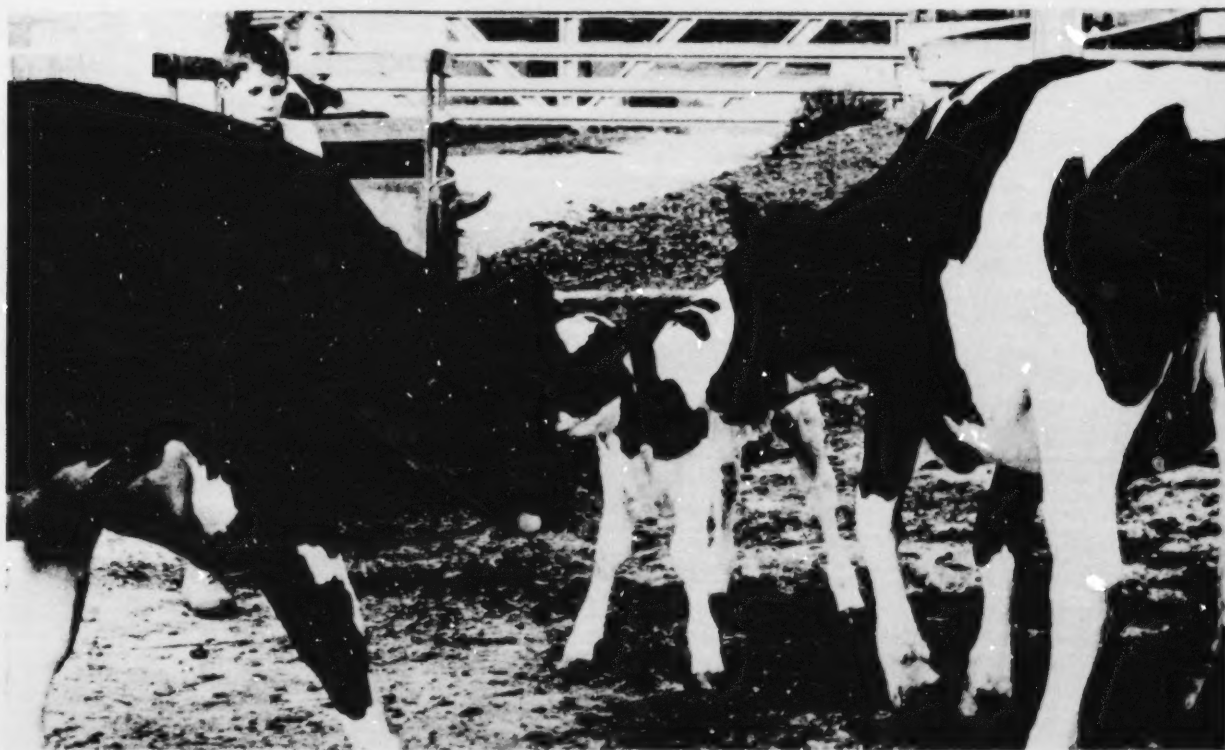


Day-old calf is fed colostrum, its own mother's extra rich and protective first milk, by young Gus in maternity barn before he and brother Shane transport calf to nursery. Colostrum contains important disease-fighting antibodies. Shane drives small tractor which hauls Gus and calf to their destination.





At calf nursery, Gus rushes to open gate for calf who is jumping out of specially designed trailer. Heifers, which are bovine "teenagers" midway between calf and full-grown cow, greet new calf before Gus and Shane lead her off to nursery.





Modern dairying runs on machines that need care. Joe bangs on feed system's three-way control valve to free flow. Later he found feed frozen in pipe and cleaned it out. Other winter work includes hard-facing plowshares by arc welding.

Opposite page:
Anticipating next season's field work, Joe inspects springs on No-Til corn planter in shed.



EQUIPMENT IS A BIG INVESTMENT

Joe Schwartzbeck has five tractors and sometimes all five are operating at the same time: two or three helping to chop corn and haul silage, another scraping manure from cow holding lots, and still another hauling manure away.

There are also thousands of dollars tied up in other equipment in the Schwarzbeck farm: a No-Til corn planter, seven hay wagons, three silage wagons, a field chopper, a blower to raise silage into the silo, a Haybine, a disc harrow, a springtooth cultimulcher, a hay baler, a stake truck, a pickup truck, a sprayer, a manure loader, a manure spreader, two hay rakes, an elevator for hay, a grain elevator, a grain dryer, a grain drill and a feed mixer wagon to feed cows outside.

"You can get \$100,000 in equipment real quick," Rudell Beall commented, patting the metallic side of a new feed mixer that could save him nearly half the cost of his feed bill over the years. Rudell figured he could save that much by doing the mixing himself rather than hauling his home-grown feed to a mill and paying for the mixing.

Joe and Nona don't have all the equipment they could use—just that which they can use most profitably. For instance, they need a combine for the corn they let mature to grain, but at this stage in their development, they trade the use of their No-Til planter for the use of their neighbor's combine.

BUILDINGS ARE A BIG INVESTMENT

In addition to money tied up in

machinery, dairy farmers have a vast investment in buildings, though Joe built practically all of his buildings either by himself or with help. His buildings include not only the combination milking parlor-office-milk cooling building but a stanchion holding barn for 49 cows, a storage building for machinery and some hay, a shop in which to repair machinery, bullpens to house two bulls, a free stall barn for some 80 cows (including four nice big maternity stalls, where the cows give birth to calves), a loafing shed for heifers and calves to keep them out of the weather, a baby calf house for calves 1 day to 8 weeks old, a silage bunker (a long, low, three-walled area that Joe can pack with up to 1,200 tons of ensilage), three upright cylindrical silos, and some feed bins. And last, but not least, they include a big old farm house with a



modern interior and a fresh coat of exterior paint.

The average total investment on a U.S. dairy farm today is about \$430,000, including \$80,000 each in livestock and machinery, another \$250,000 in land and buildings, and still another \$15,000 to \$20,000 in crops and inventory. That's the average. The Schwartzbecks and Bealls have a greater investment.

Altogether—land, buildings, animals, and equipment—Joe and Nona figure they had \$300,000 invested in the farm in 1975 and a much greater investment in 1981.

If they sold out in 1975, Joe said, they could probably have gotten \$450,000 to \$470,000. And they were \$215,000 in debt.

The suburban homeowner can understand their situation. Inflated prices have increased the value of urban residential property too, but an individual's

older debt might shrink in relation to the new inflated value. Yet, if the Schwartzbecks (or the homeowner) were to sell and then try to buy equivalent property, they'd have to pay the current higher price.

Joe and Nona took a chance when they went into farming in 1968. Both had been brought up on a farm and loved that kind of life. Joe had learned the problems of modern farm management by dairying on his own for 6 years on the land that was formerly his father's—land which was sold earlier and held for subdividing. Before that, Joe had worked on his father's farm since he was 15, though it meant missing getting involved with baseball, his second love, in high school.

It was a tough life, but it convinced Joe that dairying was what he wanted to do for a living—if he could only find the

right kind of land at the right price. Nona agreed wholeheartedly.

THEY FOUND A FARM THEY COULD BUILD UPON

In Carroll County, west of Baltimore, Joe and Nona finally found the 291-acre farm they wanted. The buildings were run down, the farmhouse (which must have been grand in its heyday, sitting atop a knoll far back from the winding road) had no hot water or modern wiring. But it was the farm they could afford.

It cost \$125,100. Joe and Nona went to the Federal land bank for a loan to buy the land, and to the production credit association for money to buy machinery and other production inputs.

These organizations are farmer-owned financing institutions which borrow funds from the Nation's money markets to lend to farmers.

For months they drove back and forth between old and new homes—47 miles each way—until they could make their new home habitable. Optimistically, they named it Peace and Plenty Farm, the name of Joe's father's farm.

Not everyone can go to the Federal land bank and get the money needed to start a farm. Years of experience, a dairy herd of 60 grade cows (not registered purebreds), and a logical plan were needed to convince the land bank Joe could make it.

Since then the amount of money needed to start dairy farming has tripled.

In 1975, Joe thought it would take a minimum of \$200,000 in land and about 40 good milk cows to start to support a family, "if you don't want too much machinery." His place would have cost a buyer nearly half a million dollars in 1975. By 1980, costs had increased still further.

Experience and a lot of money are two requirements for anyone considering dairy farming now. It helps if a person grows up on a farm and inherits it. Fewer and fewer people each year can meet those qualifications.

By paying themselves little or nothing a year, by paying interest on their indebtedness, and by nibbling away at the principal on their mortgage, the Schwartzbecks ultimately expect to be able to pass on a considerable equity to their children—depending on the weather, good management, and adequate prices for their milk.

They thought they might have to incorporate, though, to minimize the effect of inheritance taxes on the estate they worked so hard to build. Still, there are pitfalls in that device. When Rudell and Joyce Beall decided to incorporate,

they found that a local land transfer tax would have cost them \$10,000 to \$15,000, so they incorporated everything but the land.

DAIRY FARMERS MUST KNOW MANY SKILLS

Rudell and Joe agree that a farmer today has to be a lawyer, a bookkeeper, a veterinarian, a mechanic, and a manager, or hire the services of each. They also agree that farmers have always been "Jacks of all trades" because they have been unable to hire a great deal of expensive help.

As Rudell Beall said, "If I had to hire all my work done, pretty soon you'd see a 'for sale' sign out on my barn."

Farming involves less physical activity than years back, but the farmer's brain works harder...and the stakes get bigger every year. An established dairy farmer can make one big blunder; two might very well wipe him or her out.

What kinds of decisions? Well, there's the "when-to-hay" decision. When to expand is another.

Let's say you need more cows to keep the wolf away from the door. Can you provide the feed for the new cows? What about more land? At what cost? Can you carry the debt load? Will you need another silo? Another barn, tractor, or combine? When do you sell the corn? When do you buy fertilizer?

Joe said he made a poor management decision in a recent year when he bought fertilizer at \$179 a ton. Two months later, the price had dropped to \$155.

A major decision is selecting a sire for future cows. A cow must be bred not only for its ability to produce milk according to the record of the sire's daughters—and those of the family line—but also for traits that make the

animal strong and salable.

Rudell said it cost him \$1,500 to buy two storage tanks of liquid nitrogen. That cost was more than recovered because he bought the fertilizer for \$18,000 and stored it until he needed it. Otherwise, he would have had to pay \$25,000.

"Of course, you could miss it," he said, meaning the right time to buy the fertilizer.

Rudell recalls that years ago he "missed it" by not offering more than \$4,900 for 70 acres near his farm. The owner kept the farm and later was offered \$150,000 for it.

WHY STAY IN FARMING?

Why do they do it—these dairy farmers?

"Well, I have my days," Joe said. "There are some days when you could walk right in here and buy this place." He added, "If the kids don't grow up interested in farming, I'm busting my head against a wall for nothing."

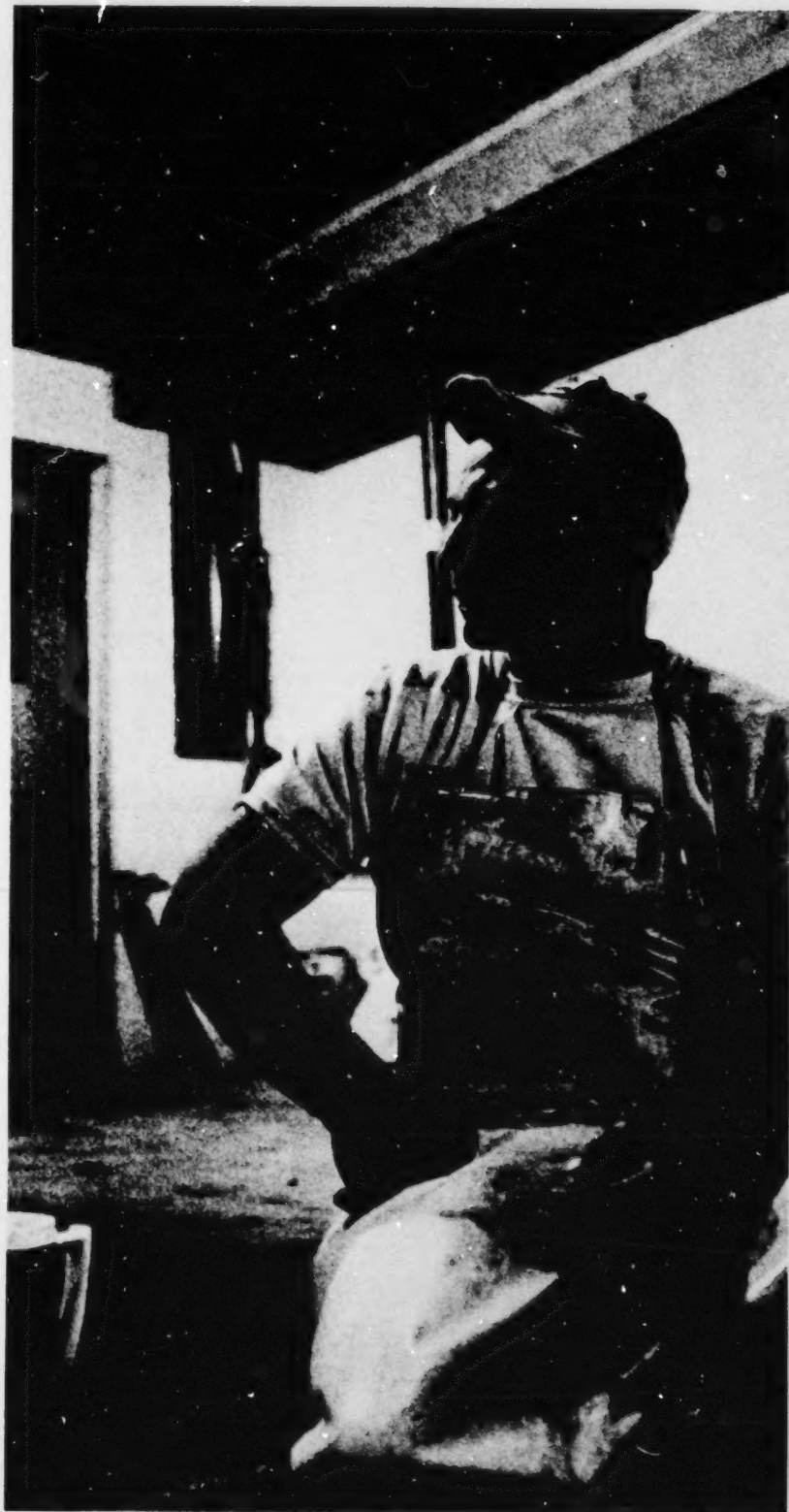
At the Beall farm, Rudell looks out over a corn field and says there's "a certain amount of pride" in successful farming.

"Even a man with a lot of college degrees—he respects my success," Rudell continued. "When someone says 'who's pickup is that?' I can say 'mine.' When someone says 'whose new car is that?' I can say 'mine.'"

"If you can't have some of those things, what's it all about? That's pride."

There's a broad streak of independence up the back of America's farmers too. One old codger recalls he had worked his way up to become manager of a large automobile parts business while still a youth, but he returned to farming.

"You have to make up your mind whether you want to work for yourself or for someone else," he explained. Most farmers have decided to work for



Joe's first coffee break arrived about 5 a.m. on steps leading from office to milking parlor. Nona took her turn with the cows. Later in the day there's time for a little fun on the tire swing in front of their home.





Silhouetted against evidence of his growing net worth—holding barn, left; office-milking parlor, center; maternity barn, right rear; and feed equipment—Joe pauses after morning's milking to philosophize, "If the kids don't grow up interested in farming—them I'm busting my head against the wall for nothing."

themselves.

Some comment acidly that they are, after all, working for the Government. Others say they are working for the feed dealer. But they enjoy their independence, and they fight to keep it that way.

Still, Government plays a role in their lives... often quite directly.

GOVERNMENT AND DAIRYING

One role of the Government in the lives of the Schwartzbecks, Bealls, and other dairy farmers is the Dairy Herd Improvement Program.

Government scientists examine records from the program, and Cooperative Extension Service experts help dairy breeders across the country identify superior bulls by keeping track

of their daughters' production.

It is teamwork like this between scientist and farmer through Extension and other services that has advanced American agriculture.

It was an agricultural teacher in a country high school who made the difference in Rudell Beall's career. The late Donald Watkins, who also taught the Schwartzbecks, created an organization of 14 farmers in the neighborhood when Rudell was just starting out on his own.

The organization was the Business of Farming Club, which met to discuss and examine the latest advances in farm equipment and systems. Its members turned over to Watkins, on a confidential basis, their work plans for his evaluation. Watkins would then discuss the good moves, as well as the bad, without identifying individual farmers. The whole group bene-

fited from these sessions.

Says Rudell: "He devoted his whole life to helping farmers in the area."

There are other Government involvements in dairy farming. One is the milk order.

MILK MARKETING ORDERS

America's stake in the continued well-being of its farmers, so that consumers will be assured of an adequate supply of food, is the principle underlying the Federal milk marketing orders.

Each milk marketing order, issued by the Secretary of Agriculture after a public hearing and producer approval, establishes minimum prices that handlers must pay producers or associations of producers based on the way the milk is used. The

price takes into account not only supply and demand conditions, but also economic considerations, such as distance to market.

Class I uses of milk—the highest priced—are usually fluid products. Once the demand for fluid products has been filled, the remaining milk is made into class II and class III products.

Class II uses are usually for soft items, such as yogurt, cottage cheese, and ice cream. Class III uses are usually for hard products, including cheese, butter, and nonfat dry milk.

Although the different classes of milk bring different prices, all producers in a market, such as the southern part of a State, who participate in the Federal milk marketing order program, get the same uniform (blend) price for their milk.

SUPPORT PRICES

Another aspect of Government involvement in the dairy industry is the support price for manufactured milk.

Under the support price program, the Government buys carlots of butter, natural cheddar cheese, and nonfat dry milk at announced prices—which are calculated to enable processors to pay farmers the announced support price—between \$13.10 and 90 percent of parity.

Most of the butter and cheese bought goes for the school lunch program and a program for the needy. The nonfat dry milk also goes for domestic and foreign food assistance programs.

What is parity? It's a percentage figure that compares the farm price for milk with the cost of what the operator pays to run the farm. A period of years is selected to represent a "fair" situation for dairy farmers and that period is said to provide 100 percent parity. If the farm price of milk and production

costs both go up 50 percent then milk is still at 100 percent of parity. But if farm milk prices increase only 20 percent from the base period, and the farmer's production costs increase 50 percent, then milk is at 80 percent parity.

Every month, statisticians gather information across the country on prices farmers pay and receive... for every dairy product... to set the basis for calculating the parity price for all milk and the parity equivalent price for manufacturing grade milk.

Why the parity system? The Government wants to encourage production of adequate supplies at prices the consumer can afford.

IMPORT QUOTAS

Congress imposed import quotas for dairy products—namely, cheese and butter—because imports tend to reduce prices at the farm level. When the Secretary of Agriculture decides imports are too high he tells the President. The President can impose fees or quotas on imports.

However, the President might first ask countries to slow down shipments voluntarily.

The Government also can levy duties when a country ships dairy products to us at cutrate prices made possible through subsidies paid by a foreign government.

OTHER GOVERNMENT ROLES

Joe Schwartzbeck, Rudell Beall, and their fellow dairy farmers are affected in other ways by governments at local, State, and national levels. Local taxes on farmland affect them. So do zoning and other land use regulations.

Perhaps the most important local government actions that affect Joe, Rudell, and all the other dairy farmers in the country are the health regulations of the cities where they sell their milk.

City inspectors visit producers to check on sanitary conditions for milk handling. They take water samples. They make strict demands. Farmers must obey to stay in business.

More and more important to dairy operators are the regulations for waste disposal. The problem of handling manure is not as simple as putting the waste on fields. Sometimes large lagoons are required along with other disposal structures. Larger establishments truck the manure away.

Another role of the government affecting dairy farmers is the cooperative. Farmers create a cooperative to buy their milk. The cooperative finds a way to market the milk and dairy products in the cities. The farmers own the cooperatives and share in their successes. Joe's cooperative also owns milk retail outlets.

JOE AND NONA ARE BUSY IN COMMUNITY

Joe and Nona Schwartzbeck keep busy in the organizations which so closely affect their lives: their cooperative, the Carroll County Fair, two Holstein breed clubs, a progressive farmer's club and a Maryland Farm Bureau's young peoples group. The Farm Bureau is an independent general farm organization, the largest farm organization by far in the Nation.

They like to be social and go out evenings. But the milkings that end at 7 p.m. and begin at 4 a.m. every day of the year restrict the time they have available for such activities.

Mechanization helps, but

today's typical dairy farm, though far different from the farms of past generations, is still a long way from being a factory. Asked if he would compare his farm to an industrial factory, Joe replied: "It should be run like one but we can't. I should get a regular markup, say 10 percent over cost, but I can't. I'd like to work my men only 40 hours a week and give them 2 weeks' paid vacation a year, but I can't afford to operate like that."

Despite decreasing numbers of farmers, dairying remains a highly competitive business. There are no restrictions, licenses, or franchises to keep anyone from getting into it, and, while only the best managers survive, the effect of many trying to succeed results in very aggressive competition. And they're all selling exactly the same product—milk, not some patented variation or new model.

WHAT MAKES THEM UNHAPPY?

Joe and Nona are outspoken about things that bother them. They were asked: "What makes you unhappy?"

"Rain, when the hay's raked and ready to be baled," Joe said. "Weather can make you or break you. A twister ruined a couple of fields of corn on our farm a couple years ago and it was rough

cutting that up."

"People talking about unemployment when there's plenty of work to be done," Nona observed, "that's what makes me unhappy. There's Mr. Gus working as hard as he does and paying his taxes while other folks are doing nothing but drawing unemployment."

They are equally outspoken about what makes them happy.

"Sitting up on a tractor and watching the silage going into the silo—moving on—that's what makes me happy," Joe said. "I like looking at a field of barley in the wind. In the fall, when I'm combining, I like looking back and seeing the auger half filled with corn."

"A heifer calf (that is, one which can grow up to be a milk cow later, rather than a bull) every other birth—that makes me happy."

Nona has a "thing" against fake flowers, so she keeps a large flower garden near the house and fresh flowers in the house. And she likes the peace and quiet of the country.

"Gus and Shane have friends out to the house, but they're invited," she emphasized. "I have some friends in big city subdivisions where the neighborhood kids are running through their house all the time. I don't think I'd like that."

FAMILY IS IMPORTANT TO THEM

She likes the independence of farming and what it does for the family.

"We do a lot together as a family," Nona said. "I think families are kind of getting pushed into the background these days, and I don't like that trend."

The children have plenty of room to play in the spacious old farm home of the Schwartzbecks. Daily family life centers around the huge kitchen, which is equipped not only with all the latest devices of modern living but some reminders of the past, such as a large fireplace with an old copper apple butter kettle inside it. There's even room for a small office desk for Nona.

Surrounded by an acre of neatly clipped lawn and well-tended gardens, the Peace and Plenty Farm home provides the perfect setting for the kind of life the Schwartzbecks enjoy.

So, Joe and Nona keep dairy farming and sending milk into town. So do the Bealls and many thousands of other dairy farmers across the United States.

"I wonder what would happen," Rudell Beall pondered, "if I didn't send my 8,000 pounds of milk a day into the city. I wonder what would happen if we all went out of business and there was nowhere else to go to buy milk."

INTERESTED IN DAIRY FARMING?

What does it take to get started in dairy farming?

- Money.
- Ability to borrow.
- Experience.

Young people reared on a farm often start on the home farm or on a farm nearby. Often they get help from their families, such as financial help, favorable rental arrangements, or free use of farm machinery.

Some nonfarm beginners may also get financial assistance from relatives or others, or from earnings in off-farm work. Financial help from private sources can do much to provide a good start.

Beginning farmers with little or no experience may start by working as farmhands. They can learn by doing and observing, without having to make managerial decisions or put up capital. Although they usually can support a family on the wages, they probably cannot accumulate much capital. But the experience gained will be an asset when they go out to rent a farm or apply for a farm loan.

Beginners often rent rather than buy their first farm. Renting requires less capital and less risk for the operator. As a tenant, the operator makes day-to-day decisions on his own. The landowner usually approves such decisions as the kinds and amounts of crops and livestock to be produced, and the use and care of land and improvements.

Many important managerial decisions are made jointly by tenant and landowner. Sometimes they may own livestock together.

Other ways beginners can keep the amount of capital to a minimum without greatly reducing their incomes include:

- Buying used machinery at farm sales or from dealers
- Hiring custom machines to pick corn, harvest small grains, and fill silos.
- Exchanging work with neighbors for seasonal work requiring additional help.

Beginners may buy some of the land they farm and rent the rest. This part ownership arrangement has become common even among established farmers.

Some operators start farming part time on a small farm. They continue in nonfarm work as a primary source of income long enough to gain experience and accumulate capital for a full-time farming business.

RULES OF THUMB

Dr. Terry Howard, professor of dairy science in the Extension Service at the University of Wisconsin, has some rules of thumb for prospective dairy farmers.

"They must generate \$1.80 in operating income for every \$1 of cash expense. Their herds should produce an average of at least 14,000 to 16,000 pounds of milk per year per cow.

"Farmers must invest \$225,000 to \$275,000 in land,

cows, building, and machinery. For every family unit which survives on the income from the farm, there should be at least 35 to 45 cows being milked. Assuming that the unit is going to produce most of its own feed, a farmer would need to control, through ownership or renting, at least 130 to 150 crop acres, depending on the land's capabilities.

"It boils down to a gross income of \$80,000 to \$90,000 a year for a farm operated by one person, based on an investment of \$1,200 to \$1,600 per cow in buildings and \$800 to \$1,500 per acre in land.

APPLICATIONS JUDGED ON OWN MERITS

The Farmers Home Administration (FmHA), which makes ownership loans to farms, says a one-person dairy operation should have 50 to 100 cows, each producing 13,000 to 15,000 pounds of milk a year.

A dairy farmer can get by without growing feed—though the farmer should grow roughage, silage, and hay—if the feed is bought when the price is right, and if on-farm storage is provided.

It takes 30 to 40 cows to pay each hired hand. For every 50 milkers, there should be another 50 replacement heifers.

In addition to local lenders and FmHa, major lenders include the Federal land banks and the production credit associations, all owned by borrowers.

RESOURCES NEEDED, 1979

State	Land			Total labor used	Capital				
	No. of dairy farms sampled	Average acres	Average cropland harvested		Land and buildings	Machinery & equipment	Livestock	Crops	Total
			<i>Acres</i>	<i>Hours</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
New York	610	411	228	5,554	180,787	66,475	94,471	25,325	367,058
Wisconsin	347	382	263	4,907	117,509	73,684	92,910	44,825	328,928

RETURNS FROM FARMING, 1979

State	No. of dairy farms sampled	Total capital	Gross farm income	Operating expenses	Net farm income	Interest	Return to operator & family labor
		<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
New York	610	367,058	174,284	123,591	50,693	23,526	27,167
Wisconsin	347	328,928	140,231	77,423	62,807	11,301	51,507

TRENDS AND PROJECTIONS

	Year			
	1970	1975	1980	1985 ²
Population (million) July 1 ¹	201.9	213.8	225.6	236.3
Milk production (billion pounds)	117.0	115.4	128.4	130.8
Per capita civilian consumption				
Total milk equivalent (pounds)	561	540	542	550
Milk cows	12,000,000	11,139,000	10,815,000	10,085,000
Number of operations with milk cows (thousands)	647.9	443.6	335.3	260.0
Milk production per cow	9,751	10,360	11,875	12,970
Cows per operation	18.5	25.1	32.3	38.8

¹Eating from civilian supplies.

²Forecast.

Prints of these photographs may be obtained from the Photography Division, Office Governmental and Public Affairs, Room 4407, U.S. Department of Agriculture, Washington, D.C. 20250. Limited numbers are available free to news media. Others pay a small fee. Revised November, 1981

What's Happened to the Schwartzbecks?

Since *People on the Farm: Dairying* was published in May 1976, the family and farm of Joe and Nona Schwartzbeck of Carroll County, Maryland, have continued to grow in every respect.

In September, 1981, Gus celebrated his 16th birthday and expected to get his driver's license in the near future. He was a senior in high school and looking forward to becoming a farmer. His brother, Shane, was 12, and in the seventh grade. His heifer won three shows, including the State fair, and when he took one of the geese from the family pond to the county fair, it was judged the grand champion waterfowl. His folks say he is always inventing devices, a useful skill on the farm.

Both youngsters participated in tractor driving contests at the county fair. At 14, Gus won the junior division.

The boys were spending every weekend in 1981 raccoon hunting near the farm. Their father however, doesn't like plunging through creeks and bramble bushes in the dark in order to hunt.

Judy Boom, the purebred Basset hound, died of old age. There is still a cat named Peaches hanging around the milking parlor.

With the continuing help of Mr. Gus, Joe and Nona milked 106 cows in 1981, "because the monthly bills demand it," as Nona said. They would rather milk just 75 good producers and cut down on the work.

Indeed, the cost of running Peace and Plenty Farm had tripled in 6 years.

Every item on their expense sheet for 1975 could be tripled, Joe said, except the interest. In that category, despite high interest rates in 1981, Joe and Nona were paying less than triple because their loans were based on earlier rates.

At the same time, Joe and Nona's income doubled to \$320,000 in 1980. So had their debt, reaching about \$400,000 in 1980.

But the Schwartzbecks were expanding. They bought a nearby 146-acre farm in 1979. There they grew crops and fed 60 Holstein steers, planning to sell them for use in the expanding fast-food market.

Joe and Nona keep up with science. With the aid of a specialist from a private firm in Pennsylvania, they conducted four embryo transplants on their farm in 1980.

Four fertilized eggs from one of their best producing cows were implanted in Schwartzbeck heifers.

In January, 1981, the calves were born, and Joe and Nona took one of them to the national Holstein-Friesian Association sale in Baltimore, where they sold her for \$8,000. Since each pregnancy cost Joe and Nona \$700 they figure they more than doubled their investment in cash and still had three calves on the farm. They planned more embryo transplants.

Also new on the farm are Big Jim and what Joe calls "low income housing." Big Jim is a silo as big as a rocket poised on a launching pad behind the barn. Thirty feet in

diameter and 80 feet tall, Big Jim stores 1,200 tons of corn silage, replacing the open-air bunker silo that once occupied the east end of the barnyard. There's a maternity barn where the bunker was.

The "low income housing" is 12 calf hutches, which look like rather large dog houses. Joe and Nona decided to give each of 12 calves its own "home" with its individual feeder and an open to the south. The aim is to cut down on disease with fresh air and separation of the animals. It seems to work.

By 1981, Nona had quadrupled the number of flowers she grew around the house. When winter forces her to bring them in the house, she can hardly see out the windows, she said, so she planned to install a greenhouse for them next to the milking parlor.

Still busy in the community, she was in line to be president of the county fair in 1982.

Nona fell off a ladder in the calf house the week before Thanksgiving Day in 1980 and broke some ribs. But she still cooked Thanksgiving dinner.

She doesn't have time to get all her work done, so when a real estate broker called to say the county was interested in buying their farm for a landfill, she didn't want to be bothered.

"I've got too much of my blood, sweat, and tears in this farm to sell it at any price," she told him. End of conversation.

They've turned down an offer of more than a million dollars for their farm.

"So what if we never get out of debt?" Nona asked. "We live good. We live as a family."

